California Public Utilities Commission
& California Energy Commission

Smart Inverter Functionalities Workshop – Phase 1

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Workshop Overview

- Housekeeping and Introductions
- Agenda
- In-Scope / Out-of-Scope at Today's Workshop
- Background
- Rule 21 Phase 2- Item Number 6

Workshop Agenda

9:15 – 10:30	**Focus of Workshop and Background**
10:30 – 12:00	**Phase 1 Recommendations for Autonomous Functions** » Panel Discussion » Q&A: Recommended Functions
12:00 – 1:00	**Lunch Break**
1:00 – 2:00	**Discussion of Communications Protocol Issues** » Panel Discussion » Q&A: Communications issues relative to recommended functions
2:00 – 3:00	**Discussion of Testing, Certification & Implementation Plan for Recommended Inverter Functions/Settings** » Working Panel Discussion » Q&A: Testing, Certification & Implementation Plan issues
3:00 – 4:00	**Next Steps: Implementation Strategy:** » Discuss preparation for Phase 2 » Overview of timeline for comment period » Development of language for updating tariff

In-Scope vs. Out-of-Scope

In-Scope at the Workshop:	**Out-of-Scope at the Workshop:**
• Provide constructive feedback to improve the proposed recommended inverter functions in the morning session • Provide constructive input to improve the proposed certification and testing processes • Identify areas needing further discussion	• Other phases of Rule 21 proceeding – this workshop is only for Smart Inverters under Phase 2, Item # 6 • Smart Inverter Functionalities applying to other tariffs or programs other than Rule 21 • Curtailment Reimbursement Issues

Tensions We May Face

- *The perfect vs. the good*
- *Arriving informed and being willing to listen to others perspectives*
- *Problem-solving approach versus being prepared to not find an immediate solution*

California Policy Direction: Large Amounts of Solar

- RPS target calls for increasing the amount of renewable electricity in the state's power mix to 33 percent by 2020
- To support this target, Governor Brown's Clean Energy Jobs Plan called for adding 20,000 megawatts (MW) of new renewable capacity by 2020, including 8,000 MW of large-scale wind, solar, and geothermal resources and 12,000 MW of localized renewable generation close to consumer loads and transmission and distribution

Integration Challenges

Achieving high penetrations of distribution connected PV will require the utilization of increasingly advanced inverters

Experience in Germany suggests delays could be costly to California and ratepayers.

Enabling high penetrations of PV through the use of smart inverters has been supported in various agency documents:

- 2012 Renewable Action Plan
- 2012 California's Transition to Local Renewable Energy: 12,000 Megawatts by 2020 (staff contribution).
- 2011 Integrated Energy Policy Report, June 22, 2011-IEPR Workshop on Distribution connected DG
- 2011 Energy Commission KEMA study of PV in Europe

Rulemaking 11-09-011: Rule 21 Phase 2

September 22, 2012 – Rule 21 Scoping Memo Item 6:

- *"issues includes potential modifications to technical operating standards…"*

February 13, 2013 - The CPUC announces the formation of the Smart inverter Technical Working Group to explore inverter functionalities

- *The working group was tasked with first identifying what advanced inverter capabilities would be beneficial*
- *The Energy Commission supports this effort via technical support*

Technical Working Group

- The Smart Inverters Technical Working Group has developed recommendations for autonomous inverter settings
- Today's workshop will discuss the recommendations, a certification and testing plan, and timeline
- Stakeholder input from this workshop and the documents will be considered for revision and inclusion to the record
- The technical working group will continue discussion of testing plan though the summer/fall of 2013